

EDITOR: J. M. HONIG

ASSOCIATE EDITORS: J. W. RICHARDSON
W. R. ROBINSON

Journal of Solid State Chemistry

VOLUME 68, 1987

ACADEMIC PRESS, INC.

Harcourt Brace Jovanovich, Publishers

San Diego Orlando New York Austin Boston

London Sydney Tokyo Toronto



Copyright © 1987 by Academic Press, Inc.
All rights reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1987 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0022-4596/87 \$3.00

MADE IN THE UNITED STATES OF AMERICA

Contents of Volume 68

NUMBER 1, MAY 1987

LETTER TO THE EDITOR

K. S. NANJUNDASWAMY AND J. GOPALAKRISHNAN. Formation of Novel Molybdenum and Tungsten Sulfides by Reduction of MoS_2 and WS_2 : A New Route to Chevrel Phases	188
A. RAMINOSONA, E. BORDES, AND P. COURTINE. Molybdenum-Doped V-P-O System. I. Preparation and Characterization	1
JEAN-YVES PIVAN, ROLAND GUÉRIN, AND MARCEL SERGENT. A New Classification Scheme to Describe and Predict Structure Types in Pnictide and Silicide Chemistry	11
M. A. BEG, A. AHMAD, AND H. ASKARI. Formation of Metal Chelates in Solid State Reaction between 8-Hydroxyquinoline and Carbonates of Cadmium and Zinc	22
J. C. W. FOLMER, J. A. TURNER, AND B. A. PARKINSON. Photoelectrochemical Characterization of Several Semiconducting Compounds of Palladium with Sulfur and/or Phosphorus	28
E. WANG AND M. GREENBLATT. Lithium and Sodium Insertion Reactions of Phosphate Tungsten Bronzes	38
M. A. BEG AND RAFIUDDIN. Kinetics and Mechanism of Reaction between Silver Molybdate and Mercuric Iodide in Solid State	45
J. BARBIER. $(\text{Ni}_x\text{Mg}_{1-x})_{10}\text{Ge}_3\text{O}_{16}$: A New Phase with Structure Related to Olivine and Spinel	52
SHIGERU OKADA, TETSUZO ATODA, AND IWAMI HIGASHI. Structural Investigation of Cr_2B_3 , Cr_3B_4 , and CrB by Single-Crystal Diffractometry	61
M. ČEH, D. KOLAR, AND L. GOLIČ. The Phase Diagram of CaTiO_3 - SrTiO_3	68
XIE SISHEN AND S. GELLER. Crystal Structure and Electrical Conductivity of the "One-Dimensional" Solid Electrolyte N,N -Dimethylmorpholinium Pentaiodotetraargentate	73
R. TETOT, C. PICARD, AND P. GERDANIAN. High-Temperature Thermodynamics of the Vanadium-Oxygen System for $0 \leq \text{O/V} \leq 1.5$. II. Direct Measurements of $\Delta H(\text{O}_2)$ at 1323 K	88
I. N. CHAKRABORTY, R. A. CONDRATE, SR., J. R. FERRARO, AND C. F. CHENUIT. The Vibrational Spectra and Normal Coordinate Analyses of Cubic and Monoclinic SiP_2O_7	94
N. MORITA, T. ENDO, T. SATO, AND M. SHIMADA. The Oxidation State of Antimony and Electrical Properties in Antimony-Doped Rutile	106
H. C. KANDPAL AND K. C. JOSHI. Diffusion-Limited Energy Transfer from Dy^{3+} to Ho^{3+} in Dimethyl Sulfoxide	112
BIJOY P. GHOSH AND KAMALAKSHA NAG. Thermal, Dielectric, and Electrical Transport Properties of Some Bivalent Metal Perrhenates	118
S. INAMURA, K. NOBUGAI, AND F. KANAMARU. The Preparation of NaCl-Type $\text{Ti}_{1-x}\text{Al}_x\text{N}$ Solid Solution	124
LIGAO CHEN, YILUM LIU, AND YUANZHU CHEN. Solid State Chemistry of Polytungstic Acids and Their Salts. I. Preparation of Fluorescently Pure Tungstosilicic Acid with a Cation-Exchange Membrane Electrolytic Method	128

LIGAO CHEN, YILUM LIU, AND YUANZHU CHEN. Solid State Chemistry of Polytungstic Acids and Their Salts. II. Synthesis, Properties, and Structure of Non-crystalline Hydrogen–Sodium Metatungstate and Powdered Crystalline Cesium Metatungstate	132
P. GOUGEON, M. POTEL, J. PADIOU, ET M. SERGENT. AgMo ₆ Te ₆ : Nouveau type structural unidimensionnel a chaînes linéaires $ \text{Mo}_{6/2} ^I_\infty$	137
C. MICHEL, L. ER RAKHO, M. HERVIEU, J. PANNETIER, AND B. RAVEAU. BaLa ₄ Cu ₅ O _{13+δ} , an Oxygen-Deficient Perovskite Built Up from Corner-Sharing CuO ₆ Octahedra and CuO ₅ Pyramids	143
M. TAKANO, Y. BANDO, N. NAKANISHI, M. SAKAI, AND H. OKINAKA. Characterization of Fine Particles of the α-Fe ₂ O ₃ –SnO ₂ System with Residual SO ₄ ²⁻ Ions on the Surface	153
A. AKROUNE ET A. CASALOT. Transition métal–isolant dans V _{1-x} Mn _x O _{2-2x} F _{2x} (0 < x < 0,10) étude des propriétés structurales, magnétiques, et électriques.	163

BRIEF COMMUNICATIONS

MAMORU WATANABE, TAKAYOSHI SASAKI, YOSHIZO KITAMI, AND YOSHINORI FUJIKI. One-Dimensional Large Tunnels in the New Compound: K _x Ga _{16+x} Ti _{16-x} O ₅₆ (x ≤ 2)	177
ZB. MAZURAK, G. BLASSE, AND J. LIEBERTZ. The Luminescence of the Scheelite NaBi(MoO ₄) ₂	181
T. SIEGRIST, Y. LE PAGE, AND F. HOLTZBERG. Vacancy Ordering in Gd _{1-x} Se	185

NUMBER 2, JUNE 1987

C. N. R. RAO AND S. YASHONATH. Computer Simulation of Transformations in Solids.	193
ÖRJAN SÄVBORG, J. R. SCHOONOVER, S. H. LIN, AND L. EYRING. Time-Resolved X-Ray Diffraction by Synchrotron Radiation: The Thermal Decomposition of Cd(OH) ₂ Powders.	214
D. W. JONES, I. J. MCCOLM, R. STEADMAN, AND J. YERKESS. A Neutron-Diffraction Study of the Tetragonal–Monoclinic Crystal Structures of Some Uranium–Thorium Dicarbides	219
Z. G. MAZURAK, J.P. M. VAN VLIET, AND G. BLASSE. Spectroscopic Properties and Luminescence Concentration Quenching of the Pr ³⁺ Ion in La _{1-x} Pr _x OCl.	227
H. TAKIZAWA, T. SATO, T. ENDO, AND M. SHIMADA. High-Pressure Synthesis and Electrical Properties of Mn ₃ Ge ₅ with Mn ₁₁ Si ₁₉ -Type Structure	234
STEPHAN JAENICKE, MARGARET K. FABER, JAMES L. DYE, AND W. P. PRATT, JR. Optical Reflectivity and Absorption Measurements of Sodium C222 Sodide ...	239
GI-TAE JOO, J. SENEGAS, J. RAVEZ, AND P. HAGENMULLER. Magnesium and Zinc Cation Distributions and Correlation with Curie Temperature in Some LiTaO ₃ -Based Ferroelectric Ceramics	247
YUKIO HINATSU AND TAKEO FUJINO. Magnetic Studies on (U, La)O _{2+x} Solid Solutions	255
J. M. GONZÁLEZ-CALBET AND M. VALLET-REGÍ. A New Perovskite-Type Compound: Ca ₄ Fe ₂ Ti ₂ O ₁₁	266
H. HANEDA, H. YAMAMURA, A. WATANABE, AND S. SHIRASAKI. Relationship be-	

tween Oxygen Self-Diffusion and Debye Temperature in the Polycrystalline Magnesium Aluminum Ferrite Series, $\text{MgAl}_{2-x}\text{Fe}_x\text{O}_4$	273
B. GILLOT, M. EL GUENDOUZI, AND A. ROUSSET. Reduction-Reoxidation Behavior of Manganese Cation-Deficient Spinels	285
DANIEL LOUËR AND MICHÈLE LOUËR. Crystal Structure of $\text{Nd}(\text{OH})_2\text{NO}_3 \cdot \text{H}_2\text{O}$ Completely Solved and Refined from X-Ray Powder Diffraction	292
J. E. GREEDAN, M. SATO, NAUSHAD ALI, AND W. R. DATARS. Electrical Resistivity of Pyrochlore Compounds $R_2\text{Mo}_2\text{O}_7$ ($R = \text{Nd, Sm, Gd, Tb, Y}$)	300
LASSI HILTUNEN, JORMA HÖLSÄ, AND ZDENEK MIČKA. Crystal Structure, Thermal Behavior, and Infrared Absorption Spectrum of Cesium Hydrogen Selenite-Selenious Acid (1/2), $\text{CsHSeO}_3 \cdot 2\text{H}_2\text{SeO}_3$	307
O. L. MALTA, P. A. SANTA-CRUZ, G. F. DE SÁ, AND F. AUZEL. Up-Conversion Yield in Glass Ceramics Containing Silver	314
J. MAHY, D. COLAITIS, D. VAN DYCK, AND S. AMELINCKX. Electron Diffraction Evidence for Domain Structures in the Low-Temperature Incommensurate Phase in CuV_2S_4	320
R. S. ROTH, L. D. ETTLINGER, AND H. S. PARKER. Phase Equilibria and Crystal Chemistry in the Ternary System $\text{BaO-TiO}_2\text{-Nb}_2\text{O}_5$. II. New Barium Poly titanates with <5 mole% Nb_2O_5	330
P. A. COX, W. R. FLAVELL, AND R. G. EGDELL. Solid-State and Surface Chemistry of Sn-Doped In_2O_3 Ceramics	340
J. M. ADAMS AND D. A. HASELDEN. The Structure of a Carbon Monoxide Adduct of Zeolite 5A	351
A. SCHUTZ AND P. BILOEN. Interlamellar Chemistry of Hydrotalcites. I. Polymerization of Silicate Anions	360

BRIEF COMMUNICATIONS

A. GRANDIN, M. M. BOREL, M. HERVIEU, AND B. RAVEAU. Topotactic Dehydration of the Lamellar Oxide $\text{HK}_2\text{Ti}_5\text{NbO}_{14} \cdot \text{H}_2\text{O}$: The Oxide $\text{K}_4\text{Ti}_{10}\text{Nb}_2\text{O}_{27}$	369
R. DE BLIECK, E. VAN CAPPELLEN, G. VAN TENDELOO, S. AMELINCKX, R. GENS, AND J. FUGER. On the Lattice of Ba_3UO_6	375

BOOK REVIEWS

STEVEN L. SUIB. <i>Low Energy Electrons and Surface Chemistry</i> . By G. Ertl and J. Koppers	379
FRANK DiSALVO. <i>Electronic Structure and Electronic Transitions in Layered Materials</i> . Edited by V. Grasso	379

ERRATUM

Volume 65, Number 2, November 15, 1986: K. Yvon, A. Bezing, P. Tissot, and P. Fischer, "Structure and Magnetic Properties of Tetragonal Silver (I, III) Oxide, AgO ," pp. 225-230	380
--	-----

AUTHOR INDEX FOR VOLUME 68	381
----------------------------------	-----

The Subject Index for Volume 68 will appear in the December 1987 issue as part of a cumulative index for the year 1987.

